

# Stopping at BEVALAC Energies

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The stopping in very central Au on Au collisions at 1.15 GeV/nucleon was studied with the data taken by the EOS collaboration at the BEVALAC. Our analysis complements earlier studies by the Plastic Ball collaboration [1]. The EOS Time Projection Chamber offers a large and homogeneous phase space coverage. To select central collisions we cut on global observables which are correlated with the impact parameter. Two such observables are the total charged particle multiplicity and the isotropy ratio  $R$ , defined as:

$$R = \frac{2}{\pi} * \frac{\sum p_t}{\sum |p_z|} \quad (1)$$

where the momenta are calculated in the center of mass system. The correlation of these observables is shown in Fig. 1. The multiplicity is rising as the isotropy ratio approaches unity and finally levels off. In the following we select very central

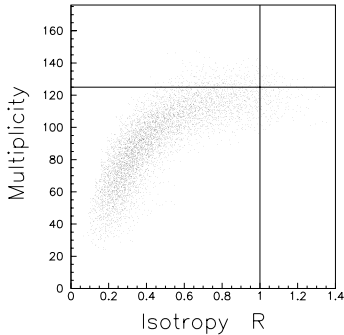


Figure 1: Correlation of the charged particle multiplicity and the isotropy ratio.

events by requiring a *multiplicity*  $> 125$  or alternatively an isotropy ratio  $R > 1$ . Both cuts select roughly the same total cross section. However, only a minor fraction of the selected events belongs to both event classes simultaneously. In Fig. 2 we present the corresponding rapidity distributions. We reflected the yield in the forward

hemisphere which was derived with almost complete acceptance. In general we observe a strong pileup of nucleons at mid rapidity demonstrating a high degree of stopping. A closer look reveals that the event selection using the isotropy ratio leads to narrower distributions especially for the heavier fragments. Spectator contributions are absent. To reduce the effect of autocorrelation, which otherwise could be the explanation of this finding, we evaluated the isotropy ratio  $R$  only from  $mul - 1$  particles excluding the particle momentum which was used to increment the rapidity distributions.

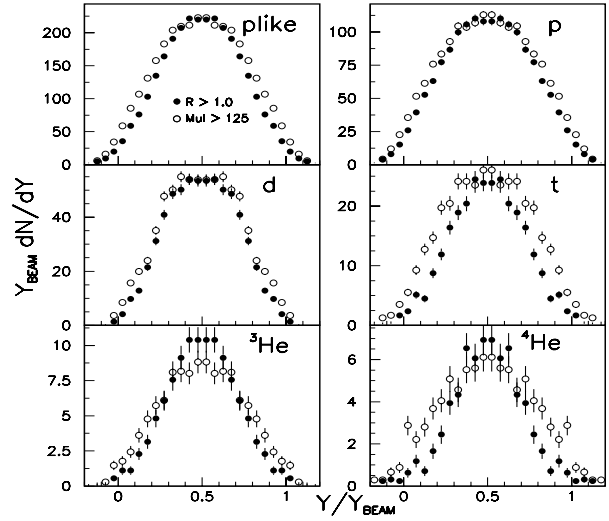


Figure 2: Normalized rapidity densities for Au on Au at 1.15 GeV/nucleon.

## References

- [1] H.H. Gutbrod, K.H. Kampert, B.W. Kolb, A.M. Poskanzer, H.G. Ritter and H.R. Schmidt, Z.Phys. A 337 (1990)